#### E. S. M. W. T. COURSE

# "Handling and Interpreting Textile Data"

# SCHEDULE OF CLASS SESSIONS

Date (	1945)	Subject	Instruct	or
Feb.	16	Fundamentals - Collection of data and Sampling	Prof.	Schwarz
	19-	Fundamentals - Significant Figures and Computation	Prof.	Schwarz
	23	Tabulation - Types, Forms, Advantages	Prof.	Schwarz
	26	Graphical Presentation - Types of Charts, Advantages	Prof.	Schwarz
Mar.	2	Graphical Presentation - Scales, Plotting	Prof.	Schwarz
	5	Rectification of Curves - Forms-equations	Prof.	Schwarz
	9	Rectification of Curves - Special papers, etc.	Prof.	Schwarz
	12	Rectification of Curves - Precision Plotting	Prof.	Schwarz
	16	Variables and their Control	Prof.	Schwarz
	19	Analysis of data - Population thru Median	Prof.	Schwarz
	23	Normal Distribution and Standard Deviation	Prof.	Fox
	26	Computation of Standard Deviation	Prof.	Fox
	30	Computation of Standard Deviation	Prof.	Fox
Apr.	2	Significance of data - Tests	Prof.	Fox
	6	Significance of data - Comparisons	Prof.	Fox
	9	Quality Control - Deviations	Prof.	Fox
	13	Quality Control - Control Chart	Prof.	Fox
	16	Analysis of Variance	Prof.	Fox
	20	Simple and Rank Correlation	Prof.	Schwarz
	23	Simple and Rank Correlation	Prof.	Schwarz

Program Subject to Change in regard to instructor and date.

Course Approved by and Sponsored by United States Office of Education.

Under Auspices of Lowell Textile Institute; Professor A. Edwin Wells. Institutional Representative.

Instructors: Edward R. Schwarz, Professor of Textile Technology, in Charge of Textile Div., Mass. Inst. of Tech.

Kenneth R. Fox, Asst. Professor, Textile Technology, Mass. Inst. of Tech.

April 6, 1945

Professor A. Edwin Wells, Institutional Representative, War Training Bureau, E.S.M.W.T., Lowell Textile Institute, Lowell, Mass.

Dear Ed:

I am glad to have your undated report of your work on E.S.M.W.T. accompanying your letter of April 5th and I am pleased that you have mailed it out to the members of the Board. This will give each member an opportunity to know what is going on.

Yours truly,

HWL: EJK

cc: Mr. R. E. Derby

To the President and the Trustees of the Lowell Textile Institute:

It is approximately six months since I have given a report of progress of the War Training Program at the Lowell Textile Institute.

The demands made by industry upon our training program have been almost beyond our capacity to satisfy. Lately we have been receiving letters directly from the War Manpower Commission telling us of the critical industries in our area which are asking for assistance in training their personnel, and begging me to visit them. These requests are being met, and even as I write this report, courses are being planned for industries whose needs have already been surveyed, while others are still to be visited. On all sides we are receiving expressions of appreciation for our work. Also new industries and employees are getting acquainted with Lowell Textile Institute, its opportunities, its staff, and the many facilities it offers for training.

Each course given represents conference time of about two or three hours with top-ranking executives, further time spent in investigating their problems and in designing the needed training program. After this, planning the course in detail together with placing it in proper contract form for Washington require a few more nours of time. These few hours also involve discussion with the instructors who will give the instruction, selecting course supervisors, textbooks, and settling the details of hours for lectures, laboratory, supervised study, and home-work.

The entire ESMWT program to March 26, 1945, is summarized as follows:

19 courses have been completed or are in progress

Trainees - 92 women 251 men total 343

54 executives have been interviewed; 43 industries have been served

16 textile industries have been served; 8 courses are in progress at present

The present courses include: A large course in Lawrence being taught by Professors Schwarz and Fox of M.I.T. entitled Handling and Interpreting Textile Data; FeedWater Treatment for the Lowell area; two courses for Western Electric of Haverhill; a special course for Arlington Mills of Lawrence; and other courses for the Lowell area. Several new courses are to begin between now and June. All courses are for employees of war industries, principally for those listed to us by the War Manpower Commission.

To summarize to March 26, I have administered the complete educational program for about a thousand students in connection with the war effort at LTI (Navy and ESMWT) involving all the details from budgets and contracts to modern educational procedures. This has been at a time when LTI has needed students, as well as an opportunity to serve the war effort in educational fields.

Furthermore, our regular students have benefited by additional equipment and added course content due to instructor experience in these new courses. Striking examples are our proposed new course in Industrial Electronics for day students and pre-induction training now being given to those students who will be 18 years of age in a few weeks and desire to enter the Navy radio-technician program. In addition, LTI has received an increase in publicity and good will which cannot be measured.

Although the work has entailed sacrificial effort on my part and the part of many others, I appreciate the opportunity that has been mine to create, organize, administer, and direct this war effort at LTI.

Respectfully yours,

a. Edwin Wells

A. Edwin Wells

Mar. 26, 45

Institutional Representative Apr. 5, 1945

# ENGINEERING, SCIENCE, AND MANAGEMENT WAR TRAINING U. S. OFFICE OF EDUCATION FEDERAL SECURITY AGENCY

OFFICE OF INSTITUTIONAL REPRESENTATIVE PROF. A. EDWIN WELLS LOWELL TEXTILE INSTITUTE LOWELL, MASSACHUSETTS

April 5, 1945.

Harold W. Leitch, Chairman Board of Trustees Lowell Textile Institute Lowell, Massachusetts

Dear Mr. Leitch:

I realize that I should really make quarterly reports to the Trustees regarding the ESMWT program. However, we have been so crowded for time that it has been impossible to do so. Enclosed is a semi-annual report covering our work to date.

I recall that the first reports had to be mailed in some cases and I think by you personally. To avoid bothering you to that extent this time, I thought we might as well mail them all. President Eames usually asks me the night before a board meeting to make a report, which is painfully short notice. Therefore I have decided not to wait for a trustees' meeting, but turn out a report while I had a slight breathing spell in which to do it.

Very truly yours,

Ed Wells

A. Edwin Wells

Institutional Representative

Professor Arnold E. Hanson,

ESMWT, University of New Hampshire,

Durham, N. H.

Dear Professor Handon:

I am pleased to have the copy of the letter you wrote to President Eames at the Lowell Textile Institute, dated March 15, 1945. It was very nice of you to take the time to write about your experience with the members of the staff of the Lowell Textile Institute and their cooperative work on ESMWT. Your letter proves that the feeling is mutual.

Yours sincerely,

Harold W. Leitch

HWL:EJK

February 14, 1945

29-46 Mr. Hooper
1-10 Mr. Ebhardt
20-24 Mr. Dalton
47-48 Mr. Schuster
25-28 Mr. O'Neil
18-19 Mr. Ortstein
14-17 Mr. Wilkie
11-13 Mr. Arthur

# KHMAT Course - Handling and Interpreting Textile Data

The mill has some notebooks that are suitable and will furnish one to each employee if it is wanted. Mr. Plaisted has also approved the furnishing of the \$1. textbook "Outline of Statistical Methods" by Arkin & Colton to each employee taking the course.

Herewith are slips which should be distributed among the employees taking the course. These slips should be presented to the person having custody of the books at the time of registration on Friday, February 16th, or by special arrangement thereafter.

HWL:EJK

Encs.

March 15, 1945

President Charles H. Eames Lowell Textile Institute Lowell, Massachusetts

My dear President Esmes:

I should like to extend a sincere word of appreciation for some very real help we received from your institution during the past year.

You will recall that in connection with the conduct of our Engineering War Training program, we encountered some very definite needs in the textile mills of our state, --- needs which our own staff could not meet.

When I discussed the problem with you about two years ago. I learned that there might be some opportunity for us to receive help from the staff of Lowell Textile Institute.

We are both delighted and grateful to recount that we have this year seen that help brought to our textile mills through the good offices of your personnel at the Institute. The industries of the state which have benefited by this service have given us their expression of appreciation. I feel that this expression should be passed on to you folks.

The helpful cooperation of Professor Wells has been especially valuable. Both because of his grasp of the larger service possibilities of Lowell Textile Institute to the textile industry and because of his evident capacity for developing and organizing intelligently conceived training programs, Professor Wells has given us very valuable assistance. This cooperative relation with your institution has been welcomed and appreciated.

Believing that you and the officers of the Institute will be interested in this reaction from the campus of a neighboring institution, I am taking the liberty of thus extending this cordial expression of thanks.

Sincerely.

fruolite Hanson

Associate Professor of Industrial Education

AEH:w Copy to:

Mr. Harold W. Leitch Mr. Roland E. Derby University of New Hampshire
E.S. M. W. T.
Durham, N. H.

# UNIVERSITY OF NEW HAMPSHIRE E. S. M. W. T. Durham, N. H.

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Sincerely,

(Signed) Arnold E. Hanson
Associate Professor of
Industrial Education

AEH:w Copy to: Mr. Harold W. Leitch Mr. Roland E. Derby

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Sincerely,

(Signed) Arnold E. Hanson
Associate Professor of
Industrial Education

W: HILA

Copy to: Mr. Harold W. Leitch Mr. Roland E. Derby

# E. S. M. W. T. COURSE

# "Handling and Interpreting Textile Data"

The following Pacific Mill employees received one copy of "Outline of Statistical Methods" and one Elbe #1026 Ring Binder and fifty sheets of graph paper:

Name	<u>Date</u>	Slip No.
Herbert A. Bagshaw	2/16/45	3
Juliette Bider	2/23/45	55
Fred A. Carden	2/16/45 2/16/45 2/16/45 2/16/45	7
Rita F. Casby	2/16/45	15
Marjory D. Christie	2/16/45	38
John Clarke	2/16/45	13
George Cohen	2/16/45	18
Eileen F. Collins	2/16/45	31
John N. Dalton	2/16/45	24
Mary K. Delaney	2/16/45	20
John A. Ebhardt	2/16/45	1
Mary Eismont	2/16/45	10
George Forsythe	2/16/45	16
Annette A. Fredette	2/16/45	26
Mary Gaidis	2/16/45	53
Helen F. Greenler	2/16/45	27
W. W. Groves	2/16/45	9
Raymond J. Hooper	2/16/45	50
Clarice A. Hope	2/16/45	25
William B. Kaupin	2/16/45	21
Laura F. Leavitt	2/16/45	
Harold J. Lynch	2/16/45	46
Charles E. McCarthy	2/16/45	51
H. Eileen McCormick	2/16/45	28
George Merrill	2/16/45	5
Frank W. Mitchell	2/16/45	37
Sylvia G. Morgan	2/16/45	52
Ruth E. Muller	2/16/45	34
Alice R. Murphy	2/16/45	35
Thomas B. Murray	2/16/45	49
Erwin H. Neal	2/23/45	56
Frank J. O'Neil	3/26/45	57
Herbert L. Ortstein	2/16/45	19
Thomas R. Palmer	2/16/45	11
Walter H. Perry	2/16/45	54
John P. Ploubides	3/21/45	22
Raymond J. Schuster	3/16/45	47
Charles S. Scribner	2/16/45	8
William E. Shann	2/16/45	14
Earl Stranch	2/16/45	2
Clifton F. Swain	2/16/45	39
Mary R. Szezepanik	2/16/45	12
Albert G. Vincent	2/16/45	36
Edgar P. Virr	2/16/45	30

# Pacific Mill Employees (Continued)

Name	Date	Slip No.
Frank E. Wallwork, Jr. Donald A. Whitefield	2/16/45	29
Robert C. Wilkie	2/16/45 2/16/45	17
M. Elsie Wright Chemical Library, Pacific Mills	2/16/45 3/21/45	33 23

TOTAL NUMBER OF TEXTBOOKS & BINDERS TO PACIFIC EMPLOYEES --- 49

The following, not employed by Pacific Mills, received one Elbe #1026 Ring Binder and fifty sheets of graph paper:

Richard L. Day	2/23/45 A2 2/16/45 001 2/16/45 003 2/19/45 017
Agnes M. Gallegan	2/16/45 001
Richard O. Morris	2/16/45 003
Lawrence W. Swan	2/19/45 017

The following, not employed by Pacific Mills, purchased one copy of "Outline of Statistical Methods" for \$1.00, and received one Elbe #1026 Ring Binder and fifty sheets of graph paper:

Byren C. Butler	2/16/45	008
William R. Christensen	2/16/45	007
William F. Crembie	2/19/45	013
Chester E. Cross	2/26/45	A6
R. E. Foster II	2/19/45	011
Bradley C. Heggins	2/16/45	005
Janice C. Lenane	2/16/45	002
Francis J. O'Brien	2/19/45	0001
Richard K. Oldham	2/19/45	020
Douglas A. Seed	2/16/45	004
Mildred B. St. John	2/19/45	Al
John H. Talbott	2/19/45	022
Peer Wedvick	2/16/45	009
Arthur Widner	2/19/45	014
Chester Woodworth	2/16/45	006

TOTAL NUMBER OF TEXTBOOKS SOLD AT \$1.00 EACH 15	\$15.00
CASH TO PROF. A. EDWIN WELLS ON 2/16/45	6.00
CASH ON HAND	9.00
TEXTBOOKS ON HAND 3/2/45	
BINDERS ON HAND 3/2/45	

Col. John H. Talbott,

Climatic Research Laboratory,

U. S. Army, Qm. Corps,

Lawrence, Mass.

Dear Colonel Talbott:

Pacific Mills has a supply of suitable notebooks for use in connection with the Engineering Science and Management War Training course on statistics entitled "Handling and Interpreting Textile Data". One of these will be furnished free to each one of your men registering for the course. They will be ready at the time of registering on Friday, February 16.

Special arrangement can be made for any persons registering later to receive a notebook.

A supply of the textbook "Outline of Statistical Methods" by Arkin & Colton will be ready at the time of the registration and there will be a charge of \$1.00 each for these books.

Yours very truly,

HWL: EJK

P. S. - Herewith is a supply of slips which should be used (001-022) in exchange for the notebooks.

Harold Rost feel as though the mill Can should take take of the instructor for the 10 weeks times a week My Saw her Plaisted 2/20. We are obligated to get the Prof. home to rechose or Lexington. but P. is to det me kerar vohether the mile ear and driver ear be used, Hrees

# Graduates of ESMWT courses at the Pacific Mills

		Textile Engineering	Textile Texting	Textile Chemical Testing
c	Frank Broadhead		*	
c	Janice M. Campbell		*	*
1	Rita F. Casby	*		*
c	John T. Casey	*		*
c	Katherine C. Coyle			*
c	Mary K. Delaney		*	*
P	Annette A. Fredette		*	
P	Clarice A. Hope	*		*
6	Genevieve P. Jacobchuk			*
c	William B. Kaupin			*
c	Ruth D. Landry		*	*
P	Dorothea L. Looney	*		
c	Alicia S. Meisser			*
c	Francis E. Mosher		*	*
V	Herbert L. Ortstein	*		
c	Walter H. Perry	*		
P	Helen M. Sirois	*		*
P	Leslie B. Spencer		*	*
V	Norman A. Trumbull	*		
P	Josephine C. Wholley	*		
P	Gertrude E. Wieland			*

Reca 3/16/45 notified JND+ FON

February 14, 1945

Prof. Edward R. Schwarz,

Mass. Inst. of Tech. (Room 3-309),

77 Massachusetts Ave.,

Cambridge 39, Mass.

Dear Sir:

Confirming the telephone message of last Friday, we will arrange to have the mill car call for you at about 5 p. m. on Friday, the 16th. The driver, James Cockroft, will report to the watchman at the main entrance on Massachusetts Avenue.

Yours truly,

Harold W. Leitch, Gen. Supt. in Charge of Research

HWL: EJK

February 14, 1945

Mr. Hooper -29-46 Mr. Ebhardt - /-/0

Mr. Dalton -20-24

Mr. Schuster 47-48 Mr. O'Neil -25-28

Mr. Ortstein - 18-19

Mr. Wilkie -14-19 Mr. Arthur -11-13

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HWL: EJK

Encs.

# CLIMATIC RESEARCH LABORATORY - Officers

John H. Talbott, William Rozelle Christensen, Robert E. Forster II. Richard O. Morris.

\* George Cohen (1/17/45)

## CLIMATIC RESEARCH LABORATORY - Enlisted Men

John E. Fitzgerald, Arthur Kasper, Chester E. Cross, Herbert B. Bleier, William F. Crombie, Robert P. Frank, Ford R. Hampton,

Bradley C. Higgins, Richard K. Oldham, Arthur L. Widner, Jr., Chester L. Woodworth, Douglas A. Seed, Alvin Weinstein, \*Stuart W. Zimman (1/17/45)

# CLIMATIC RESEARCH LABORATORY - Civilian Employees

Janice C. Lenane. Agnes M. Galligan, Marie J. Anton. \*Mildred B. St. John (1/17/45)

# RATH & STRONG, Inc.

- Warren W. Groves

## LAWRENCE HIGH SCHOOL

n\*Francis J. O'Brien (1/30/45)

# PACIFIC MILLS.

Alice R. Murphy, Clifton F. Swain, Sylvia G. Morgan. Doris E. Schirner, Sarah E. Forrest, Alexander R. Manderson, Frank W. Mitchell, Raymond J. Hooper, Edgar P. Virr, - George E. Merrill, - Herbert A. Bagshaw, Laura F. Leavitt, THE REPORT OF THE PARTY OF THE John M. Anderson,

c Louise M. Gordon, c William B. Kaupin, Rita F. Casby, William E. Shann,

L John Clarke,

L Thomas R. Palmer. H. Eileen McCormick (2/7/45)\*

□ Clarice Annie Hope (2/7/45) \*

• Eileen Frances Collins (2/8/45)

Marguerite G. Muse,

Beatrice G. MacNab,

Mary R. Gaidis.

Marjory D. Christie,

Ruth E. Muller,

/ Harold J. Lynch,

Margaret E. Wright,

Frank E. Wallwork, Jr.,

John A. Ebhardt,

Mary J. Eismont,

Earl H. Strauch.

Charles S. Scribner,

Donald A. Whitefield,

- Janice M. Campbell,

c Mary K. Delaney,

DHerbert L. Ortstein,

E George Forsythe,

E Robert C. Wilkie,

L Mary R. Szczepanik,

Annette Alma Fredette (2/7/45) \*

Helen Frances Greenler (2/7/45)

-Fred T. carden (2/8/45)





Micalions Rec Climatic Research (25) Muchides & Coken) George Cohen (1/17/45) William Roselle Christensen. Chemical Robert E. Forster II. (12) Richard O. Morris. Physical CLIMATIC RESEARCH LABORATORY - Enlisted Men 4 Atcher R. 01(4). .blaregsita . I nict Engineering Arthur Kasper, Chester E. Cross. dester L. Woodworth, Herbert B. Bleier. Processing William F. Crombie. Douglas A. Seed, Alvin Weinstein, Robert P. Frank, (10) Ford, R. Hampton. Standards Dept (21) General Office Janice C. Lenano, Agnes M. Galligan. Dye + Fire. Marie J. Anton. Mildred B. St. John (1/17/45) \* #10 BATH & STRONG, Inc. Warren W. Groves \* Laurence High . Marguerite G. Muse. Alice R. Murphy. Beatrice G. MacNab. Clifton F. Swain, Sylvia G. Morgan) TARY D. Christie. Doris E. Schirmer. Total Tollum .6 9 Bergh E. Forrest, Har I. Lynch, Alexander R. Manderson. .JugirW . H Jorgram Frank W. Mitchell. Frenk E. Wallwork, Jr., Hawand J. Hooper. Slips for Textbrok & notebook for Varific Implayees and Slips for notebooks only (for people from outside Pin) Jallatt - 001-022 (22) Oneil 25-28 (4) Brun - 0001 (1) Elhaut - 1-10 (10) Hoofer 39-46. (18) Schuster 47-48 (2) noapplications arthur -11-13 (3) Wilke - 14-17 Reserve A1 to A6 Outside Ortstein - 18-19 \*(2) Reserve 49 to 66 Pacific Datton - 20-24 "Applications sent to Frof. Wells on date in parantheses and

Mr. Hooper Mr. Dalton
Mr. Schuster Mr. O'Neil
Mr. Arthur Mr. Wilkie
Mr. Ebhardt Mr. Ortstein

# ESMWT Course - Handling and Interpreting Textile Data

Some questions have arisen regarding this course and there has been some hesitancy on the part of individuals about actually registering after having made application. The following comment may be heapful:

Pacific Mills is not running this course, but is helping to make arrangements and is providing facilities with the hope that the members of the class will find it beneficial.

There should be no hesitation on the part of anybody to join the class for fear of poor results. The way to find out whether anybody can get something worthwhile from the course is to try it.

For some there will be interference for a couple of weeks with classes at the Lowell Textile Evening School and there may be other interferences before the period is over. However, this need not interfere with registration. Those who cannot register tonight may register later and Mr. Ortstein will take care of the later registrations for Professor Wells.

The certificate for the course is only incidental. The practice of giving a certificate was established because it was known that some people would ask for evidence of their having completed a course. There will be no announcement in class or in public regarding the list of those who are to receive certificates at the end of the course and there will be no ceremony for the presentation of certificates. Gradings or marks are to be given only to the individual.

The slips which Pacific Mills employees are asked to sign which are to be exchanged for the textbook and notebook are for accounting purposes only; the books are to be kept by the individuals.

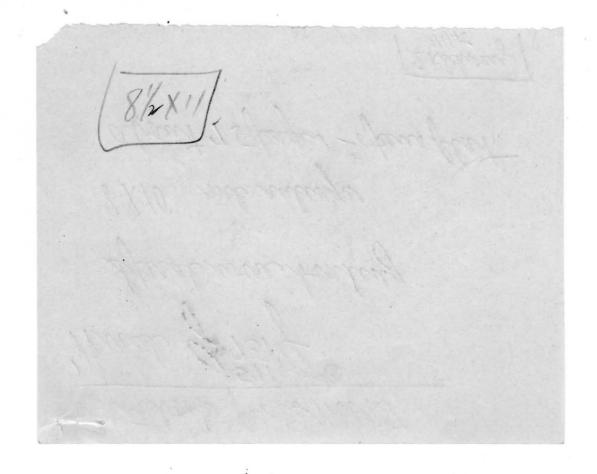
The registration for this course starts tonight at 7 o'clock in the area formerly occupied by the Central Timekeeping Department in the Atlantic Building, with the entrance at the end of the building near the C-6 gate. Professor Wells will be there to take charge of registration and distribution of books with the assistance of Messrs. Ortstein and Sheehy. Professor Schwarz will start the course when the registration is completed.

Please pass this information around to the applicants from your department.

HWL: EJK

Notebook for ESMUT. Wiral 97514 Spiral wire binding 8 X 10 ml rulings about 75 pages - opens flat

ERSchwarz /



Monday and Friday are official lates and time is from 7 to 9 km. Book selected costs \$1.00 (haspaper binding) and is not too advanced to bear the head of people in the group allamymen willbe registered and started. Willbe lift for Washington to "kisk"-but with sucha layegrap don't expectary "kick" Most every body helers standard size 8' × 11 rest stooks with 2 or 3 ring builer attendance records willbe hept as before - special form to be used which each member signs at every session-instructors then signe and pass along to metand sent to

Lieut. George Cohen, 39 Pearl St., Lawrence, Mass.

Dear George:

The Engineering Science and Management War Training course on statistics, entitled "Handling and Interpreting Textile Data" will start on Friday, February 9, at 7 p. m. Sessions will be held Mondays and Fridays from 7 to 9 p.m. and will run for 10 weeks, or a total of 40 hours. Registration is to take place on this Friday, the 9th, at 7 p.m.

The course is to be given under the direction of the Lowell Textile Institute, Professor A. Edwin Wells, Institutional Representative in Charge, and the course is to be conducted by Professor Edward R. Schwarz with the assistance of Professor Kenneth Fox.

Arrangements for obtaining the textbooks are being made. The price of the textbook will be \$1.00 and is to be paid for by the individual.

This course is much shorter than the usual Engineering Science and Management War Training course, but was proposed by Professors Wells and Schwarz and approved by the Government with the understanding that a second course is to be offered if the results obtained in this first one are satisfactory.

Yours very truly,

Harold W. Leitch, Gen. Supt. in Charge of Research

HWL:EJK



ESM.WI.T.

# Handling and Interpreting Textile Data

The first meeting on the above course will be held on Friday, the 9th, at 7 p.m. and the next one will be on the following Monday, the 12th, or Tuesday, the 13th.

Friday is automatically settled as one night on which the course is to be given; the other night will probably depend on which night Professor Schwarz can come. Some of the people who propose to come can't be sure until they know what nights the course is to be given.

Everybody should come with notebooks and pencils. Spare ink wells should be provided as ink is needed to make out the registration forms. The copy of the registration for Washington must be in ink.

Plenty of blackgoard space is needed. (We have two 4 X 8 blackboards and Professor Wells said that would be enough.)

Regarding textbooks. The textbook to be used is entitled "Outline of Statistical Methods" by Arkin & Colton. The cost is not known, but it will not be more than \$4.00. The books could be ordered through the book store and charged to the L. T. I. Associates. There surely should be 40 from the applications made out. (Mr. Leitch thought that all people would be interested in the book even if they could not attend classes and that it would be safe to order 50 books - Pacific would guarantee.) If Pacific guarantees, 50 or possibly 60 books might be ordered and a few could be returned if not needed.

In the preliminary contract drawn up, Professor Schwarz is scheduled to give at least 60% of the course and may possibly give about 80% of it. He can't handle the whole thing because he must be away - Wright Field, Dayton, etc. When Professor Schwarz can't be there Professor Fox will take over. Professor Fox is considered to be just as good as Professor Schwarz. (Mr. Leitch said he knew Professor Fox, but that the people here did not know him.)

We are to send for Professor Schwarz at M. I. T. between 5 and 5:30. (In order to make allowance for driving conditions, etc., we will make arrangements to reach there at about 5 p.m.). Park the car on Massachusetts Avenue opposite the main entrance of the Naval Architectural Building. Classes close at 5 p.m., but there will be a watchman on duty at the right at the main door. Go to the watchman and he will 'phone Professor's Schwarz' office.

(The above information was telephoned by Professor Wells to Mr. Leitch)

Partitude for the form of the

EJK

# Handling and Interpreting Textile Data

The first meeting on the above course will be held on Friday, the 9th, at 7 p.m. and the next one will be on the following Monday, the 12th, or Tuesday, the 13th.

Friday is automatically settled as one night on which the course is to be given; the other night will probably depend on which night Professor Schwarz can come. Some of the people who propose to come can't be sure until they know what nights the course is to be given.

Everybody should come with notebooks and pencils. Spare ink wells should be provided as ink is needed to make out the registration forms. The copy of the registration for Washington must be in ink.

Plenty of blackboard space is needed. (We have two 4 X 8 blackboards and Professor Wells said that would be enough.)

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# Handling and Interpreting Textile Data

The Engineering Science and Management War Training course on statistics will start on Friday, February 9, at 7p.m. under the above title. The following session will come either on Monday, the 12th, or Tuesday, the 13th. The sessions will run from 7 to 9 p.m. and will last for 10 weeks or a total of 40 hours. The meeting place is in the Atlantic Building in the first floor area formerly occupied by the Central Timekeeping Department, with entrance by way of the door at the end of the building near the C-6 gate; the same door used to enter the Paymaster's Department.

The course is to be given under the direction of the Lowell Textile Institute, Professor A. Edwin Wells, Institutional Representative in Charge, and the course is to be conducted by Professor Edward R. Schwarz with the assistance of Professor Kenneth Fox.

Registration will take place on Friday, the 9th. Those who can be there that evening should register even if there is a question as to whether the other night is suitable.

The textbook to be used is entitled "Outline of Statistical Methods" and was written by Arkin and Colton. Arrangements for obtaining the textbooks are being made by Professor Wells. The price has not been obtained. The textbook is to be paid for by the individual.

This course is much shorter than the usual Engineering Science and Management War Training course but was proposed by Professors Wells and Schwarz and approved by the Government with the understanding that a second course is to be offered if the results obtained in this first one are satisfactory.

(This information comes from Professor Wells and is passed along for your enlightment.)

HWL: EJK

CC: COL. TALBOTT

MR. HOOPER

MR. DALTON

MR. EBHARDT

MR. WILKIE

MR. O'NEIL

MR. ORTSTEIN

Lelephone from Prof Wells

1614 F A.M.

Consetate held on mondays and

Fridays at 7. P.M. = official

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conditions

\$1.00

February 5, 1945

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MR. EBHARDT

MR. WILKIE

MR. O'NEIL

MR. ORTSTEIN

February 5, 1945

Professor A. Edwin Wells, Office of Institutional Representative, ESMWT, U. S. Office of Education, c/o Lowell Textile Institute, Lowell, Mass.

Dear Sir:

Regarding the course on "Handling and Interpreting

Textile Data" one thing has not been settled and that is how

many enlisted men are going to be allowed to register and if

they are not all going to be allowed to register we would like

to have Colonel Talbott given the chance to make the ar
rangements as to choice. If possible, we would like to have

it appear that they are all registered, even though they

actually are not.

Yours very truly,

Herold W. Leitch, Gen. Supt. in Charge of Research

HWL:EJK

#### MESSAGE BY TELEPHONE

	_		200	teary w,	19 40
From	Prof.	E. Wells	(Lowell	Textile)	
Telephone	No	168			
Called	34-3-30	EJK			
at		1	0:40		_o'clock
1. 10.4			25,15		Operator

Remarks:

Professor Wells called to advise that they have received approval from Washington for the course in statistics.

It is expected to start the latter part of next week (either Thursday or Friday).

Time and nights will be advised after Prof. Wells has taken matter up with Prof. Schwarz.

Going to Boston today - may call back later today. Will come here early part of next week to go over entire matter.

Prof. Wells mentioned matter of room, blackboards, and notification of students. Was advised that room and blackboards were taken care of and that we would notify students (instead of having him send cards to each individual)

#### MESSAGE BY TELEPHONE

			February 2,	19 45
From	Prof.	E. Wells	E. Wells (Lowell Textile	
Telephone	No	168		
Called		EJK		
ut			LØ:40	_o'clock
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Memorandum from

1. W. LEITCH

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27	28	29	30	31		

40.

Calco

Professor A. Edwin Wells, Office of Institutional Representative, EMSWT, U. S. Office of Education, c/o Lowell Textile Institute, Lowell, Mass.

Dear Sir:

Herewith I am sending you applications by these additional cardidates for the statistics course under the Engineering Science and Management War Training. All three are for people from the Climatic Research Laboratory -- one is for an officer, another is for an enlisted man, and the third is for a civilian employee.

Referring to the applications from the Climatic Research Laboratory, other things being equal the selection of the enclisted men should be subject to a conference with Colonel Talbott.

Yours very truly,

Harold W. Leitch, Gen. Supt. in Charge of Research

HWL:EJK

Incs .

January 30, 1945

Professor A. Edwin Wells, Office of Institutional Representative, EMSWT, U. S. Office of Education, c/o Lowell Textile Institute, Lowell, Mass.

Dear Sir:

Herewith I am sending an additional application for the statistics course under the Engineering Science and Management War Training. This is for Francis J. O'Brien, a teacher at the Lawrence High School.

Yours very truly,

Harold W. Leitch, Gen.Supt. in Charge of Research

HWL:EJK

Enc.

sut 1/12/45
January 11, 1945

Professor A. Edwin Wells,
Office of Institutional Representative,
EMSWT, U. S. Office of Education,
c/o Lowell Textile Institute,
Lowell, Mass.

Dear Sir:

Herewith I am sending you a number of blanks which have been filled in by candidates for the Engineering Science and Management War Training course in statistics. Included are forms for 38 Pacific Mills employees, // for members of the U.S. Army, Climatic Research Laboratory ( 4 officers and /3 enlisted men), 3 civilian employees of the Climatic Research Laboratory, and 1 member of the staff of Rath & Strong, Inc.

Yours truly,

Herold W. Leitch, Gen. Supt. in Charge of Research

HWL:EJK

Enes.

Sport some titue on the stim. Dure Mry 1/3/45 My Maily Statistical Analysis + Construction. This course will probably be two nights a week 6 to 8 or 1 to 9 PM at The will. Will deal with amount of information needed to arrive at conclusions. also interpretation and evaluation of reports made by others. May include people construction of reports. Persons now interested include Research Defet - Cost Dept - Standards Dept - accounting Dept + Climatre Research personell. Course is of college level and High School defeloma + 1 year of algebra needed to qualify first 17 pupils but we have these now + course is open to all. Sponsored by Fed Yout. - No tuition for. Probable teacher - Knof Rueman of M. I. T. Return applications to nee as soon as possible.

Telephone message from Prof. Wells, Lowell Text. Inst. 1/8/45

There is a fast restriction on the training of enlisted men; officers (second-lieutenants and up) are allowed to enter course without any restrictions.

All civilians are eligible no matter by whom they are employed.

Not sure whether they can give the course until they hear from Washington. May have to get M·I.T. or Northeastern to sponsor the course, if L. T. I. is not qualified on this course in statistics which is a borderline case.

Must be careful because they are continually warned that investigations (congressional) are expected of these courses after the war and since the present set-up in Washington (bureau) will be gone, the schools sponsoring the sources will be held responsible.

Of:

December 19, 1944

Jamine

Col. John H. Talbott, Climatic Research Laboratory, Lawrence, Mass.

Dear Sir:

Confirming our conversation of today, anybody in your organization is invited to join a number of individuals employed in this vicinity (and mostly by Pacific Mills) in making application through Lowell Textile Institute for inclusion in a class in STATISTICS under Engineering, Science and Menagement War Training.

We hope that such a course can be arranged to be given by Prof. Harold A. Freeman of M. I. T., but we cannot hope to get it if all the applicants are employed by Pacific Mills. So, I would greatly appreciate having a number of your personnel join with these people of ours in filling out applications.

It is understood that such applications are voluntary on the part of the individual and that any action taken has no direct connection with Climatic Research Laboratory of with Pacific Mills.

Yours very truly,

Herold W. Leitch, Gen. Supt. in Charge of Research

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HWL: EJK

Return fine

ENGINEERING, SCIENCE, AND MANAGEMENT WAR TRAINING U. S. OFFICE OF EDUCATION FEDERAL SECURITY AGENCY

OFFICE OF INSTITUTIONAL REPRESENTATIVE

PROF. A. EDWIN WELLS LOWELL TEXTILE INSTITUTE LOWELL, MASSACHUSETTS

Copy oton 12 Blanks ruer, Elhardt - 9 blanks mr. Hooker 19 blanked mi. Oststein 1+5 Extra

COL. TALBOTT 13 Blanks +3+9 mu WILKIE Dlanks

Harold W. Leitch, General Superintendent, Worsted Division, Pacific Mills, Lawrence, Massachusetts.

Dear Mr. Leitch:

In filling out the preliminary applications enclosed, it is essential that each applicant fill in the three blank lines above "experience last three years", giving all mathematical subjects that he has taken. Places and dates need not be given, but the approximate length of a course, i.e., one term, one year, 80 hours of evening school. In other words, to put down simply Algebra with no indication of time would not be sufficiently clear. The equivalent of a first year high school algebra course must be shown by the minimum number of seventeen applicants. Beyond this minimum we can accept applicants who show the equivalent of at least Algebra Al, which is algebra through fractions. While the going may be a little difficult at times, nevertheless the trainees should acquire considerable useful knowledge from the proposed course.

We are enclosing several carbon copies so that these instructions can be turned over to various companies whose employees are being enrolled in this course. Name and number of course in the upper right hand corner should be left blank. We shall fill that in. Note the request at the top of the application blank that all data be printed. It is essential that we be able to read the data without misunderstanding. We trust that no applicants will inform us that they were born in 1944. This is a rather common error in filling out applications.

It is rather doubtful that the government will finance a fourth course for the Pacific Mills only. I admit I am guessing, but from situations outside our area, this might be true. At any rate, I urge that as many applicants as possible be obtained from other mills. I should think the Arlington Mills would be interested, as they already have men in our Industrial Electronics program.

Cordially yours,

a, Edwin Wells

### Instructions for filling out applications for course in Statistics

Omit name and number of course (upper right hand corner).

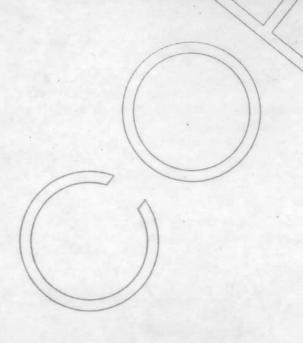
Print all data in order that we may be able to read it.

Be careful of year of birth (you were not born in 1944).

On the three lines above the words "experience last three years" carefully list all mathematics and the number of hours or terms for each mathematical subject.

Be sure the applicant signs his name in writing.

Some official of the company should approve the signature at the bottom of the application on the line indicated.



Mr. Dalton Mr. Hooper Mr. Hooper

Ortstein

ENGINEERING, SCIENCY, AND MANAGEMENT WAR TRAINING
U.S.OFFICE OF EDUCATION
FEDERAL SECURITY AGENCY

December 13, 1944.

Office of Institutional Representative Frof. A. Edwin Wells Lowell Textile Institute Lowell, Massachusetts

Harold W. Leitch, Worsted Division, Pacific Mills, Lawrence, Massachusetts.

Dear Mr. Leitch:

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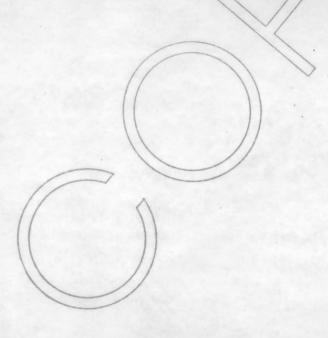
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R. WILKIE Mr. Dalton Mr. gbhardt Mr. Hooper Mr. O'Neil Mr. Ortstein

From--HWI.

COPY ENGINEERING. SCIENCY, AND MANAGEMENT WAR TRAINING U.S.OFFICE OF EDUCATION

FEDERAL SECURITY AGENCY

December 13, 1944.

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> Harold W. Leitch, Worsted Division. Pacific Mills. Lawrence, Massachusetts.

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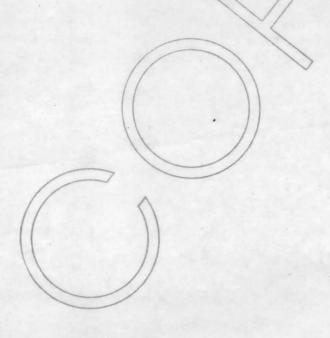
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## ENGINEERING, SCIENCE, AND MANAGEMENT WAR TRAINING U. S. OFFICE OF EDUCATION FEDERAL SECURITY AGENCY

OFFICE OF INSTITUTIONAL REPRESENTATIVE PROF. A. EDWIN WELLS LOWELL TEXTILE INSTITUTE LOWELL, MASSACHUSETTS

December 15, 1944.

Harold W. Leitch, General Superintendent, Worsted Division, Pacific Mills, Lawrence, Massachusetts.

Dear Harold:

Thanks for your letter of December 14. Enclosed are fifteen application blanks. My feeling is that if we can get six qualified applicants from any companies other than the Pacific Mills, eleven or twelve more from the Pacific Mills, also qualifying, will give us a satisfactory group for our proposal to Washington. However, we must try to enable as many of the forty applicants to qualify as possible.

Professor Douglass, Institutional Representative of M. I. T., tells me that this type of course has an unusually high mortality. Even though the course can be held to about sixty hours, the lack of laboratory experiments, which are possible in so many machinery type of courses, is not conducive to maximum enthusiasm, and sustained interest. Professor Douglass told me that there should be at least thirty-five or forty in the entering group in order that mortality does not drop the course down to a closing out number. Of course, statistics does not have quite the glamor that some other courses do, hence the high mortality is quite understandable.

As soon as I have received the proposed outline from M.I.T., I shall have a conference with you regarding details.

Cordially yours,

a. Edwin Wells

December 14, 1944

Professor A. Edwin Wells,
Office of Institutional Representative,
EMSWT, U. S. Office of Education,
o/o Lowell Textile Institute,
Lewell. Mass.

Dear Ed:

Your letter of the 13th is at hand together with the blank applications and instructions. I will need about a dozen or more application blanks as I expect to get some applications from people in the Climatic Research Laboratory of the Quarter-master Corps. How many such people do you think we should include in a qualifying class of 17 in order to get government sanction? Would 6 be enough? If we qualify a total of 17, how big a class can we have? It looks as though we would have about 40 applications.

Yours truly,

HWL:EJK

November 30, 1944

Professor A. Edwin Wells, Institutional Representative, ESMWT, Lowell Textile Institute, Lowell, Mass.

#### Dear Ed:

I have had an inquiry here in regard to a course on statistics useful in connection with job study, time study, sampling, testing, etc., and would like to know what you might offer and whom you could get to put on such a course.

Best regards.

Yours truly,

HWL:EJK

Called HWI MAN

FEDERAL SECURITY AGENCY

U. S. OFFICE OF EDUCATION

WASHINGTON 25, D. C.

Engineering, Science, and
Management War
Training

October 25, 1944

Professor A. Edwin Wells Lowell Textile Institute Lowell, Massachusetts

Dear Professor Wells:

Your preliminary proposal for the course in Electrical Engineering for the Maverhill plant of the Western Electric Company is being approved. The program you have planned to assist this company seems excellent and ideally adapted to the needs of the industry. Barring termination of the war with Germany or Japan, there seems no reason why the program should not be carried to completion under ESMWT sponsorship.

We wish you every success with your courses.

Very truly yours,

E. T. Donovan
Principal Specialist in
Engineering Education

#### ENGINEERING, SCIENCE, AND MANAGEMENT WAR TRAINING U. S. OFFICE OF EDUCATION FEDERAL SECURITY AGENCY elderoval sees out at slever see gief Jonese ou bus ment assessed section whit le-

entions a sailler ea entertrant sint for these test on illubous has vitalided

office of institutional representative October 10. 1944. PROF. A. EDWIN WELLS LOWELL TEXTILE INSTITUTE LOWELL, MASSACHUSETTS

Supplementary to ESMWT Report of September 25, 1944.

That and will involve, for the most part, regular stall

Since the previously submitted report, an advanced course has been completed for employees of the Pacific Mills, number 22 trainees. Proposals for same have been forwarded to Washington. Instruction is to start October 23. This will bring the gross number of trainees up to 145.

The most gratifying and largest single training program inaugurated in this area has just been completed for the Western Electric Company of Haverhill. It is really an outstanding recognition of Lowell Textile Institute and an achievement for us in the field of education for war training. The qualifications of our staff and Institute were explained to one of their executives last August, when the need for training in this company was made clear to me. The needs are critical. The product is vital to the war effort including the fields of electronics and radar. It represents a single complete unit transferred from New Jersey to Haverhill as a permanent location. The company is short-handed and had to employ untrained help. Consequently, our training is looked upon as a tremendous help to increasing production.

Last Thursday afternoon five of their top executives, together with myself and my top radio engineer, Mr. Warren Entwistle, met for exactly three hours in the company's plant. A complete training program was meticulously prepared. We were shown important processes and equipment. In addition, we were supplied with blueprints and private manuals with respect to the vital products. The following program is the result: 180 hours of training, divided approximately into one-third laboratory and two-thirds lecture and demonstration; the lectures to be given in the company's classrooms in Haverhill; the laboratory at the Lowell Textile Institute, for which the Western Electric Company is to provide bus transportation for the trainees; special design instruction will be given by engineers from the Bell Laboratories in New Jersey entirely at the company's expense, but one of our instructors must be in the classroom to organize the class session, and to handle and promote questions and discussion. This program will be divided into three units, to run as three courses under three separate contracts, with a week's vacation between courses. The program will be concluded approximately June 1, unless terminated by cessation of hostilities, as required by law. Thirty-tro qualified trainees have already enrolled for this program. Dean White, the Regional Adviser, has been contacted and is not only enthusiastic over this result of our work but has asked us to send his whole hearted approval and endorsement along with the first contract.

The officials of the Western Electric Company have come from New Jersey to New England to create this enterprise and put it into operation.

(over)

Hence, they are new to New England and to our Institute. I feel that the results of this contact between them and us cannot help but result in the most favorable publicity and goodwill on their part for this Institute, as well as a genuine contribution to the war effort in a nationally known industry that vitally needs it. I might add in closing that the course is one in special electrical engineering and will involve, for the most part, regular staff members of the Institute. Because of the heavy evening schedule, however, a few of the electronics staff will be needed to conduct the laboratory and assist in the small electronics portion of the course.

ENGINEERING, SCIENCE, AND MANAGEMENT WAR TRAINING

This program, scheduled to begin October 30, will bring the approximate gross number of trainees to 180. This makes it practically certain that we will reach the 200 trainee total by the end of this month, as other programs are pending.

It is because of the wide scope and importance of this program which has climaxed the results of our summer efforts, that I have submitted this rather detailed supplementary report.

is short-increased and had to exclude the leader. Consequently, our training

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die religion election of the or their to executives, together with agualf and my top reath auginion, its Warren Boulatie, out for execulty three bours is the concents plant. A applicate disting progress was neticallously regulated. We want show the creating traditions the sent transfer in a sent than, we Later and of Josephy file classes after the confront die belieur ame betivib , polatest to sweet this the regard the hours of textolog, divided polisiteronab bas studgel shild-bet bas traderode; bild-eno gial visientarine the leadures to be given in the Content's chastrours in Haverelli; the inborestory at the Locall Textile Legistics, for which the Western Micrisis (on any molifications in lead Islands (uses which and not state operate and ablyons of all visualite wastel and no salvented find out more resolutes of mevin of Illy at the company's expense, but one of our instructors must be in the classroom to organize the class secretor, and to handle and promote consulors and discusclos. This program will be divided into three onits, to the as three courses in three contracts contracts, with a week's dutetion between courses. The progress To notinged appropriately dense, a mines terminated by cornellon of filty Mostliffed, as remired by law. Thirty-try willied trainers as relitition empe mood and , regional Landing and , adding med , servicer, has been contracted and is not coly refined and the remail of our work but has asked

converting for any designation.

a. Edwin Wells

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A. Edwin Wells
Institutional Representative

Dean William C. White, Adviser to Region 1, ESMWT, Northeastern University, Boston 15, Mass.

Dear Dean White:

Your letter of October 4th in regard to the Engineering, Science, and Management War Training work of the Lowell Textile Institute and the activity of Professor A. Edwin Wells is most gratifying.

I am very pleased that you took time to write this letter expressing your views and those of Dean George W. Case.

It is a great help to me to know that our struggle to establish these courses at Lowell has yielded such satisfactory results.

I will consider it a privilege to present your. letter to the Board of Trustees at its meeting on next Tuesday.

Please accept my personal and sincere thanks for your assistance in the establishment of this program.

Yours truly,

HWL:EJK

cc: Mr. Derby

July 27, 1944

Professor John C. Lowe 229 Dracut Street Lowell. Massachusetts

Dear Professor Lowe:

In reply to your letter of July 26, 1944, I wish to certify to whomsoever you wish to present this letter, that you are conducting an 8-weeks' course at the Pacific Mills, Worsted Division, Research Laboratories, Lawrence, Massachusetts. These courses are "Textile Testing" and "Textile Engineering" under the auspices of the U. S. Office of Education and included in the Federal Government Project known as "Engineering, Science, and Management War Training Courses" as an aid for the war effort.

As you state in your letter, the round-trip mileage from your home to this Laboratory by automobile is  $24\frac{1}{2}$  miles and as you will have to make between twenty to twenty-four return-trips to conduct your courses, the total mileage will amount to 500 to 600 miles. This will necessitate extra gasoline than you are generally provided, by the usual ration allotment.

Very truly yours,

PACIFIC MILLS, WORSTED DIVISION

BY:

Director of Chemical Department

JND: EAD

## ENGINEERING, SCIENCE, AND MANAGEMENT WAR TRAINING U. S. OFFICE OF EDUCATION FEDERAL SECURITY AGENCY

OFFICE OF INSTITUTIONAL REPRESENTATIVE PROF. A. EDWIN WELLS LOWELL TEXTILE INSTITUTE LOWELL, MASSACHUSETTS

ESMWT

Instructor	Contact hours,	L.T.I. per week
Brown, Harry		16
Brown, Horton		18
Cushing, Lester H.		12
Everett, Charles		22
Hindle, Milton		23
Fox, Russell M.		21
Howarth, Charles		20
Lowe, John C.		19
MacKay, Stewart		16
Merrill, Gilbert		18
Nowell, Winford		16
Pero, Henry		21
Rosatto, Vittorio		20
Skinkle, John		21
Wells, A. Edwin		18
Bachmann, Herman		0

## ENGINEERING, SCIENCE, AND MANAGEMENT WAR TRAINING U. S. OFFICE OF EDUCATION FEDERAL SECURITY AGENCY

OFFICE OF INSTITUTIONAL REPRESENTATIVE PROF. A. EDWIN WELLS LOWELL TEXTILE INSTITUTE LOWELL, MASSACHUSETTS

November 7, 1944

Members of the LTI staff who have or are teaching ESMWT courses

	Lect.	Lab. =	Lect.	Total
Harry C. Brown	7	129	9.62	14.2 16.6
Horton Brown	14	3	2.4	16.4
Lester H. Cushing	17			17
Charles H. Everett		24	19.2	19.2
Russell M. Fox	24			24
Milton Hindle	10	15	12	22
Charles L. Howarth	6	15	12	18
John C. Lowe	8	15	12	20
Stewart MacKay	19			19
John L. Merrill	2	21	16.8	18.8
Henry L. Pero	6	17	13.6	19.6
Vittoria Rosatto	17			17
John H. Skinkle	10	11	8.8	18.8
A. Edwin Wells	14	4	3.2	17.2

The estimation of laboratory is on the conservative side. As President Eames has pointed out, some hours are difficult to classify. It is probable that we have classified some hours as lab which could well be called lecture. However, the above results put all instructors above 16 except Harry Brown. However, as his teaching was done during the summer, he is not affected at present.

a. Edwin Wells

Institutional Representative

Herry C, Brown record was in error, but stands corrected according to tel. from Miss Foote for Ed. Wells
11/13/44 Her f



## The Commonwealth of Massachusetts

# Department of Education Lowell Textile Institute Lowell, Mass.

Hours per week for members of the instructing staff First Term, 1944-1945

	Day and Evening	Evening Only	-747	Day and Evening	Evening Only
Professor Ball	18	4	Professor Howarth	21	5
Professor Harry C. Brown	16	4	Mr. Jack	9*	4
Professor Horton Brown	17	4	Professor Jones	22	-
Professor Russell L. Brown	17	-	Professor Lowe	23	4
Dr. Chapin	15	4	Professor MacKay	19	4
Professor Cushing	17		Professor Gilbert Merrill	. 22	4
Mr. Daley	29	6	Mr. John L. Merrill	23	4
Professor Dow	11	2	Professor Nowell	19	4
Mr. Everett	24	5	Dr. Panagiotakos	5	-
Professor Fickett	25	6	Mr. Pero	23	4
Mr. Fox	24	4	Mr. Petterson	9*	4
Professor Glen	11		Miss Rosatto	17	4
Mr. Hindle	25	4	Professor Skinkle	21	2
Professor Hoellrich	23	4	Professor Wells	18	4

\*Machine Shop, full schedule; balance of time beyond teaching given to repair and construction of apparatus and equipment.

The above hours include evening school.

November 7, 1944.

ESMWT



of which were

The Commonwealth of Massachusetts

Department of Education

Lowell Textile Institute

Lowell, Mass.

November 7, 1944.

Dear Mr. Leitch:

Enclosed is a list of members of the instructing staff and the hours per week for the first term. The
hours may differ slightly from the first list sent you
showing hours for members of the ESMWT staff. This was
caused by the fact that all had not entered the night
school hours on their day school schedules. I have since
obtained them.

Professor Wells also asked for a list of the ESMWT staff with lecture hours and lab reduced to lecture hours. His note is self-explanatory.

Sincerely yours,

Registrar

Ruth Forte

Extract from minutes of ESMWT meeting held in Boston July 31, 1944

Professor Wells reported that Lowell Textile Institute now has two electrical courses and three textile courses in session. He added that some of the textile courses are partly on company time. He advised the group that they now have staff facilities to give nine different courses on textiles, and that the Institute would be glad to supply teachers or other assistance to any of the participating colleges who may find a need for this type of instruction in their area.

Professor Wells described the textile industry as an excellent example of an industry whose training needs have been largely on the vocational level, but which is rapidly discovering the need for scientifically trained personnel to promote and advance its new technology.

Copy for Mr. Leitch and Mr. Derby

July 14, 1944

Prof. Edward Wells C/O E.S.M.W.T. Lowell Textile Institute Lowell, Massachusetts

Dear Ed:

Enclosed I am sending you a suggested outline for both a course in the Chemical and Physical characteristics of textile fibers, about which I spoke over the telephone today.

These suggestions may supplement your own ideas of what these courses should offer.

I will be away on vacation next week but you can contact Mr. O'Neil if you have any further questions.

With kindest personal regards, I remain

Very truly yours,

PACIFIC MILLS, WORSTED DIVISION

By:

Director of Chemical Department

JND: EAD

Enc. 2

July 13, 1944

#### SUGGESTED TOPICS FOR A BRIEF COURSE IN "CHEMICAL PROPERTIES OF MODERN SYNTHETIC FIBERS"

#### CHEMICAL

- I Brief description of manufacture -- raw materials, etc.
- II Elemental constitution
  - a. Relation to Chemical properties.
- III Reactions of fibers to various chemicals used in mill processing.
  - a. Acids
    - 1. Mineral and organic
  - b. Alkalis
    - 1. At various pH.
      - a. Caustic
      - b. Carbonate
      - c. Acetate Soda
      - d. Borax
      - e. Bicarbonate
      - f. Hexameta phosphate
      - g. Triethanolamine
  - c. Solvents
    - 1. Tri and Perchlor ethylene
    - 2. Acetone
    - 3. Hiflash Solvent
    - 4. Solvesso type
    - 5. Pine Oil
    - 6. Ether
    - 7. Carbon Tetrachloride
    - 8. Octyl Alcohol
    - 9. Diethylene Glycol
    - 10. Glycerine
      - etc.
  - d. Soaps -- Synthetic Detergents
    - 1. Usual soda soap
    - 2. Synthetic detergents
      - a. Naccanol type
      - b. Igepon type
      - c. Sulfated Alcohol type

Etc.

#### 3. Sulfonated oils

#### IV Orient Effect of Chemicals in mill processing

- a. Fulling
- b. Scouring
- c. Dyeing d. Fiber lubrication in yarn manufacturing

BY:

WORSTED CHEMICAL DEPARTMENT

JND: EAD

PACIFIC MILLS WORSTED CHEMICAL DEPARTMENT

## SUGGESTED TOPICS FOR A BRIED COURSE IN Physic 41 PROPERTIES OF MODERN FIBERS"

#### PHYSICAL

Im Leitch

#### Fundamental Aspects

Extension

Elongation

Elasticity

Elastic Limit Yield Point

Stress - Strain

Tension
Compression
Shear
Torsion
Flexibility
Brittleness
Malleability
Hardness
Resistance to abrasion

#### Practical Aspects

Ability to draft

Ability to hold twist

Felting properties

Effect of temperature

Effect of moisture - wet - atmospheric

Dielectric properties

Effect of lubricating oils

Worsted Physical Laboratory

By:

g.011.

#### ENGINEERING, SCIENCE, AND MANAGEMENT WAR TRAINING COURSES

Offered by Lowell Textile Institute, Lowell, Mass.

Sponsored by the United States Office of Education

#### TUITION FREE

Courses may be given at the Institute or in the plant. Instruction can be given during the day or in the evening, part time or full time.

Courses will be designed for specific plant needs in consultation with plant executives.

There is no charge for tuition. The only cost will be for textbooks and minor supplies. All courses are of college level.

REQUIREMENTS FOR ADMISSION: High School diploma or equivalent, but basic subjects needed for admission differ with the various courses.

This educational program is part of the national project supported by the United States Government for specialized training in fields essential to the war effort.

Women as well as men are to be trained in this program. WOMEN WITH TECHNICAL TRAINING are urgently needed in war industries.

Lowell Textile Institute offers specially designed courses to fit your needs in the following fields:

Chemistry and Chemical Engineering

Textile Chemistry and Dyeing

Technology of Fibers and Synthetics

Textile Fibers and Fabrics

Textile Finishing

Textile Testing

Cloth Analysis and Textile Design

AC Electrical Engineering

DC Electrical Engineering

Engineering Drawing

Textile Microscopy

General Chemistry

Manufacture of Fabrics and Related Problems

Mathematics

Textile Engineering

Electronics

Fundamentals of Radio, Part I

Fundamentals of Radio, Part II

Industrial Electronics

Electrical Instruments

Oscilloscope and Industrial Applications

Sound Systems and Public Address Systems

Safety Engineering

Personnel Training

in cooperation with other institutions

Industrial Management

Courses require fifteen or more qualified applicants.

All courses are subject to approval by E.S.M.W.T. officials.

Address all inquiries to War Training Bureau, Lowell Textile Institute, or telephone Lowell 6394, War Training Bureau, for detailed information and course application form.

Starta July 17, @ 7:00 P.M. at L. T. I.

ENGINEERING, SCIENCE, MANAGEMENT AND WAR TRAINING Lowell Textile Institute, Lowell, Massachusetts

All Courses Subject to Approval by the United States Office of Education

INDUSTRIAL ELECTRONICS, Part I

Preparatory to "ADVANCED INDUSTRIAL ELECTRONICS" Parts II, III, and IV Parts II, III, and IV are especially designed for specific war industries

#### Mathematics (review):

Fractions, percentage, powers of ten, metric system conversion factors, elementary algebra, logarithms, decibels, and right triangles

#### Direct Current:

Ohm's law, series and parallel circuits, voltage divider circuits, power, use of electrical measuring instruments - ammeters, voltmeters

#### Alternating Current:

Generation of AC wave, graphical representation of AC, wave values, phase relations, inductance, capacitance, reactance, impedance, time constants, resonance, series and parallel circuits, voltage divider circuits, power, use of electrical measuring instruments - ammeters, voltmeters, wattmeters

#### Thirmionic Emitters:

Mechanism of emission, space charge, electron stream control, amplification, multi-element tubes, metal tubes, voltage regulator tubes, cathode ray, secondary emission, rectifier tubes

#### Amplifier Characteristics:

Characteristic curves, plate resistance, amplification factor, mutual transconductance

#### Alternating Current Apparatus:

Transformers, simple AC generators, oxide rectifiers, relays

#### Electronic Measuring Devices

Ammeter and voltmeter principles, shunts and multipliers, ammeter, vacuum tube voltmeters

#### Types of Amplifiers:

Resistance, capacity and transformer coupled amplifiers; voltage and power amplifiers; circuits and application to other than communication field

Adv. Textile Engineering (Overseers)

Preliminary outline based upon conference of July 11, 1944

Tuesday, Wednesday, Friday

10:00 - 12:00 noon

72 hours

Six hours per week for 12 weeks

MODERN TEXTILE SYNTHETICS Professor John H. Skinkle 14 hours

- 1. Cellulose derivatives acetate, regenerated acetate, viscose, cellulose ethers
- 2. Prolons aralec, soy bean fiber
- 3. Nylon
- 4. Resins and fibers
- 5. Acrylates
- 6. Urea and melamine condensates

STANDARD FABRICS Professor MacKay

12 hours

Descriptions

MILL ILLUMINATION Professor A. Edwin Wells Modern trends; standards; psychology; human relations

6 hours

24 hours

TECHNOLOGY OF PRESENT DAY COLOR Miss Rosatto

- (Munsell Color System) 1. Color Terms
- 2. Color Blends
- 3. Color Values
- 4. Color Harmonies
- 5. Color Distribution and Juxtaposition
- 6. Color in Fabric
- 7. Color in the Mill
- 8. Color Trends

INTERPRETATION OF MODERN TEXTILE TESTING Professor Harry C.Brown 16 hours Twist, crimp, elongation, count, breakage, etc.

Textile Engineering II (Second hands)

Prelimary outline based upon conference of July 11, 1944

Tuesday, Wednesday, Friday 8:00 - 10:00 a.m. 84 hours

Six hours per week for 14 weeks

TECHNOLOGY OF FIBERS Prof. Russell L. Brown
Characteristics of viscose, acetates, aralac,
wool, cotton, and miscellaneous
fibers

YARN CALCULATIONS Professor Stewart MacKay 6 hours
Yarn standards; terminations of counts and weights

WEAVE FORMATIONS Professor MacKay 6 hours 2 up 2 down twill and similar weaves; fancy twills; santeens

CLOTH ANALYSIS Professor MacKay 36 hours
Analysis of serge; homespun, tweed; tropical worsted
Analysis of samples submitted by Pacific Mills

It must be understood that the hours listed above are not all given to lecture. About a fifth of the time will be given to actual laboratory work in the classroom, calculation of results and supervised study.

## ENGINEERING, SCIENCE, AND MANAGEMENT WAR TRAINING U. S. OFFICE OF EDUCATION FEDERAL SECURITY AGENCY

OFFICE OF INSTITUTIONAL REPRESENTATIVE PROF. A. EDWIN WELLS LOWELL TEXTILE INSTITUTE LOWELL, MASSACHUSETTS

- July 7, 1944.

Harold W. Leitch, Chairman, Board of Trustees, Lowell Textile Institute, Worsted Division, Pacific Mills, Lawrence, Massachusetts:

Dear Mr. Leitch:

Professor Wells wished me to write to you to confirm the meeting at Lawrence in regard to the ESMWT courses to be given to employees of the Pacific Mills. This is to be held at half past nine next Tuesday morning, July 11. Professor Wells would like to have the meeting in Mr. O'Neil's office rather than in your office. He hopes that you can be present for a little while to talk over the details of the course in Cloth Analysis and Textile Design. If you cannot be there, perhaps you can suggest some other executive with whom the details can be discussed.

Do you think any one beside Mr. Rowntree should be present at the meeting in regard to the courses in Textile Testing and Textile Microscopy?

Will you please arrange with the officer at the gate by the testing laboratory for the admission of our instructors? They can identify themselves by giving their names. The officer can tell them where to park their cars.

Unless it is necessary, Professor Wells does not plan to go to the Lower Pacific Mills.

Enclosed are copies of ESMWT-Misc. 2001 and Form 3. The duties of Institutional Representative are outlined on page 12, paragraph 27, of the former and on page 8, paragraph 16, of the latter.

I trust that I have not omitted anything from the instructions which Professor Wells asked me to send along.

Very truly yours,

Recel Foote

called gust For They

East northfield, mass June 28, 1944 I am Taking six days off- at northfield Semmay where my sole responsebility is 2 hours betwee per day in psychology and education. 500 young people here - mostly high ochool age - just the bend to hear a word about Lol. Rest of day to loaf, hike, owin in beautiful pool, etc. However - I wanted you to hear latest Kup three sacs working wertime Juday. I washed rentil mednight, Then mis sorte and I would Saturday until about one. monday morning they all worked, Result 22 tems as fallows - 5 copies of seashing Plan, 5 capies of administrative Budget, 6 copies each of 12 page proposals for two

courses. Pres, Eames organd the 22 times,

I signed them, arrived Com. Warren's office 20 mins early, they took me right in however, mr Varney and I patted each others shoulder, acted like old crowes - and he asked a few questions. Then in we want to mr. Warren - he signed, think you would have enjoyed my session with Mr. Varney -Suesday a m 15 mins early to Com, Jastu - but was asked right in -he had several good questions cleared up puther questions. Wants staff paid matthly - I was surprised as many pay two during course -Everything on way to Washington Two courses in nH start July 10, In mass. July 17. now settling my course in sittle micropy by requestant may have program at Ralbon - they have written. So will not release publicity until next week - you untimy efforts now are bearing fruit - my deepest thanks - Ed Wells



# The Commonwealth of Massachusetts Commission on Administration and Finance

State House, Boston

May 26, 1944.

Mr. Harold W. Leitch, Chairman, Board of Trustees, Lowell Textile Institute, Pacific Mills Worsted Division, P. O. Box 1077, Lawrence, Massachusetts.

Dear Mr. Leitch:

This is to acknowledge the receipt of your letter dated May 25 in which you request that the time of our appointment on Monday, May 29, be changed from 1:30 p.m. to 2:00 p.m.

The change in time fits in with my program for the day so I shall look forward to seeing you at 2:00 p.m.

Very sincerely,

Paul W. Foster Chairman.



## The Commonwealth of Massachusetts Department of Education

Department of Education

Lowell Textile Institute

Lowell, Mass.

May 11, 1944.

Mr. Harold W. Leitch, Worsted Division, Pacific Mills, Lawrence, Mass.

Dear Mr. Leitch:

In accordance with your request, I am enclosing a rough draft of what seems to me to be the essential details for the letter you intend to send to staff members. I feel that the opening sentence is rather critical and have tried so to word it that it would cater to President Eames and help to keep things smooth.

Furthermore, I feel that whether or not President Eames signs, is rather secondary. It seems to me that your signature as Chairman of the Board should be there in any case.

You may wish to make the opening or closing remarks more emphatic or stronger, or delete from mine. I hope, however, that the enclosure is of assistance. I have tried to stress, under item 4, what seems to me to be one of the major objectives of the program from our viewpoint. Possibly item 3 should be enlarged upon.

I think the staff in general has the feeling that there will be very few students here next fall. On the other hand, it is my feeling that a few members of the staff do not attach enough importance to this fact.

I shall phone you regarding our appointment next week, as we should meet at the earliest possible opportunity.

Cordially yours,

a. Edwin Wells

A. Edwin Wells

May 16, 1944

Dean William White Regional Advisor E. S. M. W. T.

North Eastern University Boston, Mass.

Dear Dean White:

I would appreciate having you tell me the procedure for changing the Institutional Representative on E. S. M. W. T. at the Lowell Textile Institute and would like to hear from you at your earliest convenience as it is desirous to officially make the change at once.

Yours truly.

Harold W. Leitch Chairman of the Board of Trustees Lowell Textile Institute

HWL: AAL

cc: Mr. Charles H. Eames, President Lowell Textile Institute Lowell, Mass.

## ENGINEERING, SCIENCE, AND MANAGEMENT WAR TRAINING U. S. OFFICE OF EDUCATION

FEDERAL SECURITY AGENCY

OFFICE OF THE ADVISER TO REGION 1
WILLIAM C. WHITE
NORTHEASTERN UNIVERSITY
BOSTON, MASSACHUSETTS

May 17, 1944

Mr. Harold W. Leitch Pacific Mills P. O. Box 1077 Lawrence, Massachusetts

Dear Mr. Leitch:

In response to your letter of May 16 I am glad to inform you as to the procedure necessary for the arrangement of a new Institutional Representative of ESMWT at Lowell Textile Institute. All that is necessary is for President Eames to write a letter to Dean George W. Case at ESMWT Headquarters in the Office of Education, Washington, D. C., stating that on and after a given date a designated member of the staff of the institution will serve as Institutional Representative instead of President Eames. When this request has been approved by Dean Case it becomes official.

President Eames came in to see me again yesterday and said that he was going to be in Washington later this week and was planning to make a personal visit to ESMWT Headquarters.

I do not anticipate there will be any difficulty in changing institutional representatives, but I do feel that it is very important that there should be a clear cut policy among ESMWT, Lowell Textile Institute, and the Massachusetts State Department of Education as to the precise way in which the college level war training program is to be handled by your institution.

As soon as President Eames returns from Washington I shall be very glad to sit down with you, Commissioner Warren, and President Eames so that we may have a complete meeting of minds.

Sincerely yours,

Lean Billiain C. 2/hits

WCW : MCG

May 9, 1944

Mr. Julius E. Werren
Commissioner of Education
200 Newbury Street
Boston, Mass.

Dear Commissioner Warren:

Mr. Hames, Mr. Derby and I appreciate the interview that we had with you yesterday in regard to the E.S.M.W.T. courses. We now understand that unless there is some objection outside of your department that preliminary and final proposals will be promptly signed by you and forwarded to another department according to State regulations.

As we told you, we had heard that the Covernor and Council would have to sign either the preliminary or final proposal or both. So we called on Mr. Foster, Chairman of the Commission on Administration and Finance, to enlighten us on this matter. Mr. Foster informed us that such procedure is not necessary and that he understands that both the preliminary and the final proposals should be signed by you as Commissioner of Education and forwarded to his department. He also informed us that any such proposals for Lowell Textile Institute would clear through his department promptly. Mr. Foster believes that a great deal of this sort of thing will have to be done in the future whether it is the R.S.M.W.T. or the Rehabilitation Program and he feels that we might as well start to set up a procedure that will operate smoothly and with satisfaction to all concerned.

In view of the situation as outlined above we are planning to try to satisfy some of the demand for these courses and will start to organize this work later on this week, unless we hear from you in the meantime.

Yours very truly,

Harold W. Leitch Chairman of the Board of Trustees Lowell Textile Institute Rep Angier Goodwin Melrose Mayor Meehan John Mc Cornick - Boston For Lane - Law. David I. Wolsh - Senote

Sinclair Weeks - Nov 9, 1944 Rudolph King Spkr-Ag

Sinclair Weeks - Paul Foster

Salten stall - Paul Foster

Mathiau + Gov. Salterstall

Mr. Julius E. Warren Commissioner of Mduestion 200 Newbury Street Boston, Mass.

Joe Montminy

Dear Commissioner Warren:

Mr. Rames, Mr. Derby and I appreciate the interview that we had with you yesterday in regard to the E.S.M.W.T. courses. We now understand that unless there is some objection outside of your department that preliminary and final proposals will be promptly signed by you and forwarded to another department according to State regulations.

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In view of the situation as outlined above we are planning to try to satisfy some of the demand for these courses and will start to organize this work later on this week, unless we hear from you in the mean time.

Yours very truly.

Harold W. Leitch Chairman of the Board of Trustees Lowell Textile Institute

At the suggestion of President Eames, the Board of Trustees has appointed Professor A. Edwin Wells to the position of Institutional Representative for the ESMWT (Engineering, Science, and Management War Training) courses sponsored by the U. S. Office of Education.

The entire staff of this Institute is urged to cooperate with Professor Wells to the fullest extent in organizing and conducting a war training program for industry that shall be a real contribution to the war effort.

This program can bring about these major accomplishments:

- Contribute to the war effort by giving war training to workers in industry, training women and men to replace draftees, and generally improve those already employed.
- Increase income to the instructing staff members who participate in the program.
- 3. Increase the enrollment of students (now a vital necessity).
- 4. Organize the Institute for the vital program of postwar rehabilitation.

It must be borne in mind that other colleges are already so organized. Furthermore, we have much to offer in the line of war training. Courses may be organized for evenings, late afternoons, full-time, and on and off the campus.

In the near future a meeting of the entire Institute staff will be held, at which time committees will be announced and full details presented by Professor Wells. Printed information will then be available and questions answered.

White-Warren - Eames - Wells - Foster 1:30 modero Operandi Meeting 3:00 Fri Sati A.M. work PM. State House Cap. 46 00 Case miss Foote - ressage to Ed.